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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/686,370	10/12/2000	Masashi Saito	07553.0010	4800

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02/14/2002

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EXAMINER

KACKAR, RAM N

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 02/14/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/686,370

Applicant(s)

SAITO ET AL.

Examiner

Ram N Kackar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 12 October 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 10 is/are pending in the application.
- 4a) Of the above claim(s) 0 is/are withdrawn from consideration.
- 5) ☐ Claim(s) is/are allowed.
- 6) ☐ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) 2 and 5-10 is/are objected to.
- 8) ☐ Claim(s) are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. 09/686,370.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s).
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6) ☐ Other:

DETAILED ACTION

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. A suggested title would be Processing Apparatus using Conservation of Processing Gases.
2. Claim 2 is objected to because of the following informalities: phrase “said primary”(second occurrence) is not understood. Appropriate correction is required.
3. Claims 5-10 are objected to because of the following informalities: phrase “ any of claims 1” is not understood. Appropriate correction is required.
4. Claim 7 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim, or amend the claim to place the claim in proper dependent form, or rewrite the claim in independent form. As claim 7 is dependant upon claim 1 it should retain all the limitations of claim 1. By claiming to connect a second primary gas supply system to circulating gas supply holes, claim 7 does not retain the limitation of independence of the primary and circulating gas systems.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
6. Claims 8-10 are rejected under U.S.C. 112, second paragraph, as being indefinite.

The phrase “ and/or” renders the claims indefinite because it does not clearly indicate the part of the claimed invention the limitation applies to.

In regard to claim 10 the claimed flow is disclosed as 500 m/sec, which is unit of velocity. Flow should be volume/time instead of length /time.

Claim Rejections - 35 USC § 102

7 The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8 Claim 1,8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Kurihara et al (JP 409251981A). (Fig5).

In regard to claim 1 Kurihara et al discloses all the limitations cited, namely independent primary (Fig 5 111 or 112) and circulating gas flows through plurality of holes(Fig 5 302) in a vaccum apparatus.

In regard to claim 8 Kurihara et al discloses buffer space above primary and circulating holes (Fig 5 302) .

In regard to claim 9 Kurihara et al discloses means for filtering circulating gas (Fig 1- 113)

Claim 10 pertains to intended use and does not structurally define any thing over Kurihara..

Claim Rejections - 35 USC § 103

9 Claim 2-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara et al (JP 409251981A).

Regarding claim 2 Kurihara discloses a plurality of holes on primary gas supply as well as circulating gas supply. Kurihara does not disclose that the hole radius and hole density of gas supply holes are constant over the entire surface and the ratio of the number of primary gas supply holes and number of circulating hole is set equal to the ratio of a target flow rate of primary gas and circulating gas. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the vacuum apparatus of Kurihara to make the hole radius and hole density of gas supply holes constant over the entire surface and make the ratio of the number of primary gas supply holes and number of circulating hole equal to the ratio of a target flow rate of primary gas and circulating gas in order to have a uniform distribution of supply gas and maintain the ratio of target flows of primary and circulating gases.

Regarding claim 3 Kurihara discloses a plurality of holes on primary gas supply as well as circulating gas supply. Kurihara does not disclose that the hole radius of gas supply holes is constant over the entire surface and the ratio of the area over which primary gas supply holes are provided and the area over which circulating holes are provided is set equal to the ratio of a target flow rate of primary gas and circulating gas and that the hole density of circulating gas supply holes is set so as to ensure that the back pressure is equal to or lower than the rated back pressure of evacuating mechanism when the circulating gas is supplied at the target flow rate. It would have been obvious to one

having ordinary skill in the art at the time of the invention to modify the vacuum apparatus of Kurihara to make the hole radius of gas supply holes constant over the entire surface and make sure that the ratio of the area over which primary gas supply holes are provided and the area over which circulating holes are provided is set equal to the ratio of a target flow rate of primary gas and circulating gas and also make sure that the hole density of circulating gas supply holes is set so as to ensure that the back pressure is equal to or lower than the rated back pressure of evacuating mechanism when the circulating gas is supplied at the target flow rate. This modification would ensure uniform distribution of supply gas, maintenance of the ratio of target flows of primary and circulating gases and required flow of circulating gas without increase of back pressure.

Regarding claim 4 Kurihara discloses a plurality of holes on primary gas supply as well as circulating gas supply. Kurihara does not disclose that the hole density of gas supply holes is constant over the entire surface and the ratio of the area over which primary gas supply holes are provided and the area over which circulating holes are provided is set equal to the ratio of a target flow rate of primary gas and circulating gas and that the hole radius of circulating gas supply holes is set so as to ensure that the back pressure is equal to or lower than the rated back pressure of evacuating mechanism when the circulating gas is supplied at the target flow rate. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the vacuum apparatus of Kurihara to make the hole density of gas supply holes constant over the entire surface and make sure that the ratio of the area over which primary gas supply holes are provided and the area over which circulating holes are provided is set equal to

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the ratio of a target flow rate of primary gas and circulating gas and also make sure that the hole radius of circulating gas supply holes is set so as to ensure that the back pressure is equal to or lower than the rated back pressure of evacuating mechanism when the circulating gas is supplied at the target flow rate. This modification would ensure uniform distribution of supply gas, maintenance of the ratio of target flows of primary and circulating gases and required flow of circulating gas without increase of back pressure.

Regarding claim 5 Kurihara discloses a plurality of holes on primary gas supply as well as circulating gas supply. Kurihara does not disclose that the ratio of number of primary gas supply holes per unit area and number of circulating gas supply holes per unit area is constant over the entire surface of the gas supply mechanism. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the vacuum apparatus of Kurihara to make sure that the ratio of number of primary gas supply holes per unit area and number of circulating gas supply holes per unit area is constant over the entire surface of the gas supply mechanism in order to ensure uniformity of primary and circulating gas distribution.

Regarding claim 6 Kurihara discloses a plurality of holes on primary gas supply as well as circulating gas supply. Kurihara does not disclose that the conductance of the circulating gas supply system is higher than the conductance of the primary gas supply system. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the vacuum apparatus of Kurihara to make sure that the conductance of the circulating gas supply system is higher than the conductance the

primary gas supply system so as to achieve target circulating flow with lower back pressure at the turbo pump.

Regarding claim 7 Kurihara discloses a plurality of holes on primary gas supply as well as circulating gas supply. Kurihara does not disclose a second primary gas system connected to circulating gas supply holes. Kurihara teaches the use of valves for flow rate adjustment. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the vacuum apparatus of Kurihara by connecting primary gas supply to circulating gas supply holes through a flow adjustment valve, to be able to use circulating supply holes for primary gas supply when circulating gas supply was not needed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- 1 Vacuum Exhauster. (JP 10125657) Sofugawa Takuji et al.
- 2 Reactor System (4805556) Hagan et al

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 703 305 3996. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703 308 1633. The fax phone numbers for the

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organization where this application or proceeding is assigned are 703 872 9310 for regular communications and 703 872 9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0661.

RK

February 8, 2002


GREGORY MILLS
SUPERVISORY PATENT EXAMINER
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